

CLAIMS

What is claimed is:

1. A refrigerator, comprising:
an ice feeding unit comprising:
an ice container which holds ice cubes;
a control member installed at a position around an outlet of the ice container to open and close the outlet of the ice container;
a connection rod rotatably installed at a predetermined position of the ice container to operate the control member, wherein the connection rod comprising:
a first eccentric part provided at a first end of the connection rod which is in contact with the control member, to be eccentric from a center of rotation of the connection rod, and
a second eccentric part provided at a second end of the connection rod which is opposite to the first end of the connection rod, to be eccentric from the center of rotation of the connection rod;
a rotary cam installed to be in contact with the second eccentric part of the connection rod, and to rotate the second eccentric part of the connection rod at a predetermined angle; and
a motor to drive the rotary cam.
2. The refrigerator of claim 1, wherein the connection rod horizontally extends from a position around the outlet of the ice container to a position opposite to the outlet of the ice container, the connection rod is bent at the first and second ends thereof to form the first and second eccentric parts.
3. The refrigerator of claim 1, wherein the rotary cam is a cylindrical shape having an inclined cam face formed at an end of the rotary cam to be in contact with the second eccentric part of the connection rod.
4. The refrigerator of claim 1, wherein the ice feeding unit further comprising:
a coiled feeding shaft rotatably installed in the ice container;

a spiral blade; and
an ice crusher installed at a position around the outlet of the ice container to crush the ice cubes.

5. The refrigerator of claim 1, further comprising:
an ice discharging path provided at a predetermined position of a door to communicate with an interior of a cooling compartment of the refrigerator, wherein the ice feeding unit feeds the ice cubes from the ice container to the ice discharging path; and
an ice dispensing recess provided on a front surface of the door to receive the ice cubes discharged through the ice discharging path.

6. The refrigerator of claim 5, wherein the ice dispensing recess comprising:
a switch to open and close an outlet of the ice discharging path and to operate the ice feeding unit; and
a guide member to prevent dispersion of the ice cubes discharged from the ice discharging path.

7. The refrigerator of claim 4, further comprising a drive motor mounted to a rear portion of the ice container to rotate the feeding shaft, the spiral blade and the ice crusher.

8. The refrigerator of claim 4, wherein the feeding shaft, the spiral blade and the ice crusher are coaxially arranged in a row.

9. The refrigerator of claim 4, wherein the ice feeding unit further comprising a guide cylinder which surrounds an outer circumference of the spiral blade to push the ice cubes to the outlet of the ice container.

10. The refrigerator of claim 4, wherein the ice crusher comprising:
a fixed cutter which is fixed at a position around the outlet; and
a rotatable cutter which is rotated along with the feeding shaft, wherein the ice cubes are held between the fixed and rotatable cutter to be cut.

11. A refrigerator comprising:
an ice feeding unit comprising:
an ice container which holds ice cubes; and
an outlet control unit to open or close an outlet of the ice container wherein an opening ratio of the outlet determines a size of the ice cubes to be dispensed through the outlet.
12. The refrigerator of claim 11, wherein the outlet control unit comprising:
a control member rotatably mounted to a position around the outlet;
a connection rod rotatably mounted along a side of the ice container to operate the control member; and
a cam drive unit installed at a predetermined position of a rear portion of the ice container so as to rotate the connection rod in a predetermined range and to operate the control member.
13. The refrigerator of claim 12, wherein the connection rod is rotatably mounted to an outer surface of the ice container and horizontally extends from a position around the outlet of the ice container to a position opposite to the outlet of the ice container.
14. The refrigerator of claim 12, wherein the connection rod is bent at opposite ends thereof to form first and second eccentric parts which are eccentric from a center of rotation of the connection rod to allow the cam drive unit to rotate the second eccentric part and to rotate the connection rod.
15. The refrigerator of claim 14, wherein when the connection rod is rotated, the first eccentric part is rotated to rotate the control member and to open and close the outlet of the ice container.
16. The refrigerator of claim 14, wherein the cam drive unit further comprising:
a rotary cam having an inclined cam face at an end thereof; and

a motor to rotate the rotary cam, wherein when the rotary cam is rotated by the motor, the second eccentric part of the connection rod which contacts with the inclined cam face of the rotary cam is rotated and moves upward and downward along the inclined cam face.

17. A method of dispensing ice cubes from an ice feeding unit in a refrigerator, the method comprising:

determining a size of the ice cubes to be dispensed from the ice feeding unit using a switch provided in an ice dispensing recess on a door of the refrigerator; and

operating the ice feeding unit based upon the determining of the size of the ice cubes to be dispensed from the ice feeding unit,

rotating a rotary cam by a motor; and

opening and closing an outlet of the ice feeding unit based upon the determining of the size of the ice cubes.

18. The method of claim 17, wherein the operating of the ice feeding unit based upon the determination comprising:

determining to dispense ice cubes of a large size;

rotating a feeding shaft and a spiral blade provided in an ice container of the ice feeding unit;

discharging the ice cubes to the outlet of the ice container;

opening the outlet by the outlet control unit; and

discharging the ice cubes to an outside of the ice container.

19. The method of claim 17, wherein the operating of the ice feeding unit based upon the determination, comprising:

determining to dispense ice cubes of a small size;

operating the ice feeding unit and discharging the ice cubes from an ice container wherein a portion of the outlet of the ice container is closed by the outlet control unit;

guiding the ice cubes placed at the outlet to a fixed cutter and a rotatable cutter controlled by the outlet control unit;

holding the ice cubes between the fixed cutter and the rotatable cutter to be crushed; and

discharging the ice cubes to an ice discharging path through an opening of the

outlet.

20. An ice feeding unit comprising:
 - an ice container which holds ice cubes; and
 - an outlet control unit to open or close an outlet of the ice container wherein an opening ratio of the outlet determines a size of the ice cubes to be dispensed through the outlet.